fell over considerable areas in southern Texas, central and northern California, and in much of Oregon, Washington, and northern Idaho.

RELATIVE HUMIDITY.

The relative humidity for the month as a whole was above the normal in the northern and eastern portions of the Lakes Region and to the eastward, in the Ohio Valley, and from the central Mississippi Valley westward to the Pacific. Elsewhere the atmosphere was in most localities drier than the average for August, especially in the South Atlantic and west Gulf States and the upper Mississippi Valley and to the westward.

GENERAL SUMMARY.

The weather was favorable for outdoor work over the greater part of the country; harvesting, haying, and thrashing made good progress. On the other hand, except for about a week near the middle of the month, the weather was generally too cool for satisfactory development of crops in many central and northern districts. However, in the East and also in the Rocky Mountains and Great Plains States warmer weather and beneficial rains were favorable for the development of field and garden crops.

The unevenly distributed rain in the South resulted in rather poor progress of cotton in some sections, while in others it was good, and picking progressed rapidly. Corn developed satisfactorily, except that the unseasonably cool weather in some sections retarded its growth. The weather was favorable for potatoes and an excellent outlook was reported almost everywhere, although there was some injury by blight in a few sections. It was also favorable for fruit generally, except that the citrus variety was injured in Louisiana and Florida by dry weather and cranberries in Wisconsin suffered from the cold weather.

Average accumulated departures for August, 1917.

Districts.	Temperature.			Precipitation.			Cloudiness.		Relative humidity.	
	General mean for the current month.	Departure for the current month.	Accumulated departure since Jan. 1.	General mean for the current month.	Departure for the current month.	Accumulated departure since Jan. 1.	General mean for the current month.	Departure from the normal.	General mean for the current month.	Departure from the normal.
	°F.	°F.	°F.	In.	In.	In.	0-10		P. ct.	
New England	69.4	+2.3	−9.2	4.12	+0.30	−0.20	5.1	0.0	83	+2
Middle Atlantic	74.2	+1.4	−3.4	3.21	−1.20	−2.30	4.5	−0.6	75	−2
South Atlantic	78.2	+0.4	+5.6	4.08	−2.10	−6.70	5.0	−0.2	79	−3
Florida Peninsula	82.1	+0.2	+3.4	6.55	−0.40	−7.90	5.9	+0.5	76	−3
East Gulf	78.9	+0.3	+4.3	6.46	−1.60	−3.70	5.3	+0.2	80	0
West Gulf	81.7	+0.7	+3.4	2.26	−0.80	−8.70	3.6	−0.3	70	−5
Ohio Valley and Tennessee	74.0	−0.5	−11.1	3.11	−0.30	+2.40	4.8	+0.3	73	0
Lower Lakes	69.5	−0.1	−17.5	3.05	+0.10	+0.60	5.0	+0.4	72	0
Upper Lakes	64.1	−2.2	−23.5	2.00	−1.00	−2.20	5.1	+0.3	76	0
North Dakota	65.9	−0.8	−13.1	0.87	−1.40	−7.90	3.3	−0.9	60	−7
Upper Mississippi Valley	70.5	−2.4	−18.5	2.47	−0.80	−0.90	4.6	+0.3	70	−1
Missouri Valley	71.3	−2.5	−8.3	3.06	−0.20	−3.10	3.9	−0.3	67	0
Northern slope	65.1	−1.6	−18.5	0.78	−0.50	−1.30	3.8	−0.1	55	0
Middle slope	72.9	−2.3	−5.8	3.01	+0.60	−4.50	4.4	+0.5	65	+4
Southern slope	80.2	+1.1	+4.0	2.89	+0.70	−4.00	3.6	−0.2	59	−4
Southern Plateau	77.0	−0.3	−9.4	1.23	+0.10	−1.00	3.0	−0.6	34	+10
Middle Plateau	72.2	+0.6	−28.1	0.44	−0.30	−1.30	3.0	0.0	38	−1
Northern Plateau	72.2	+1.9	−18.0	0.01	−0.40	−1.40	2.0	−0.7	37	−5
North Pacific	63.0	+1.1	−11.0	0.29	−0.50	−5.50	3.3	−1.3	74	−2
Middle Pacific	65.2	+0.4	−7.5	0.00	0.00	−6.20	4.2	+0.9	62	0
South Pacific	70.8	+0.3	−0.7	T.	0.00	−2.30	2.6	0.0	67	+2

WEATHER CONDITIONS OVER THE NORTH ATLANTIC OCEAN DURING AUGUST, 1916.

The data furnished are for August, 1916. Comparisons and study of the same should be in connection with those appearing in the REVIEW for that month. Chart IX (XLV-84) shows for August, 1916, the average of pressure, temperature, and prevailing direction of the wind at 7 a. m., 75th meridian time (Greenwich mean noon), together with notes on the locations and courses of the more severe storms of the month.

PRESSURE.

The distribution of the average monthly pressure for August, 1916, as shown on Chart IX, was for the most part similar to the normal, especially south of the 40th parallel. The Azores or North Atlantic HIGH was slightly more extensive than usual, although practically normal in position and intensity. The Icelandic LOW with a minimum average of 29.7 inches, was central near latitude 57° N., longitude 28° W., which was considerably south of the position usually occupied by this area. The Continental HIGH was not well developed, although an isobar of 30 inches surrounded a large territory between the 20th and 45th parallels, extending as far westward as the 95th meridian. The lowest individual pressure reported during the month, was 28.88 inches and occurred on the 31st in the 5-degree square between latitude 55° to 60°, longitude 20° to 25°. The highest reading in the same square was 30.42 inches on the 4th. This latter reading was equal to the maximum recorded in the western part of the Azores HIGH, where the minimum was 29.7 inches and the average 30.09 inches.

The mean pressure for the three decades of the month differed considerably in some localities, as shown by the following table:

Pressures over the North Atlantic during August, 1916, by 5-degree squares.

Position of 5-degree square.		Decade means.			Extremes.			
					Highest.		Lowest.	
Latitude.	Longitude.	I	II	*III	Pressure.	Date.	Pressure.	Date.
°	°	Inches.	Inches.	Inches.	Inches.	August.	Inches.	August.
60-65 N	10-15 W	30.05	29.75	29.70	30.29	5	29.26	13
60-65 N	5-10 E	30.00	29.83	29.66	30.23	7	29.48	3,27
55-60 N	35-40 W	29.88	29.76	29.59	30.11	4	29.20	22
55-60 N	0- 5 E	30.17	29.78	29.69	30.29	7	29.42	26
50-55 N	45-50 W	29.82	29.78	29.80	30.21	5	29.40	13,14
50-55 N	20-25 W	30.10	29.78	29.54	30.42	4	29.14	24
50-55 N	10-15 W	30.25	29.79	29.64	30.43	3	29.37	25
45-50 N	65-70 W	29.98	29.91	29.88	30.30	10	29.46	14
45-50 N	25-30 W	29.91	30.02	29.65	30.32	3	29.09	21
40-45 N	35-40 W	30.01	30.14	29.94	30.40	4,17	29.38	9
35-40 N	75-80 W	30.04	30.03	30.01	30.20	29	29.80	24
35-40 N	50-55 W	30.04	30.10	30.07	30.40	4,5	29.70	24
35-40 N	10-15 W	30.13	30.11	30.01	30.22	7,18	29.88	28
25-30 N	90-95 W	29.98	30.02	29.96	30.21	12	29.88	25
25-30 N	55-60 W	30.15	30.13	30.10	30.28	11	30.00	14
25-30 N	35-40 W	30.21	30.15	30.08	30.30	5,11	29.97	21
15-20 N	80-85 W	29.94	29.90	29.86	30.01	11,12	29.70	16
15-20 N	25-30 W	30.06	29.97	29.97	30.10	3	29.88	21

*Includes the last 11 days of the month.

The mean and extreme pressures presented in the above table are based on the daily pressure values determined by interpolation for each square from the MS daily synoptic charts of the North Atlantic compiled by the Marine Section of the Weather Bureau.

GALES.

The number of days on which gales were reported along the steamer lanes during August, 1916, was considerably above the normal, and in some cases the increase was marked. The greatest number occurred in the 5-degree square between latitudes 45°–50°, longitudes 30°–35°, where they were encountered on 7 days, a percentage of 23, while the normal percentage for that square is only 5. They were comparatively rare along the American and European coasts, the number being somewhat less than usual.

On August 2 a well developed LOW was central about 120 miles northeast of St. Johns, Newfoundland, where the barometer reading was 29.36 inches. A number of reports were received from vessels between the 41st and 46th parallels and the 42d and 60th meridians, that indicated southerly gales of from 40 to 56 miles an hour in the eastern portion of the storm area, while northeasterly gales of slightly less velocity prevailed over the western part. This LOW evidently moved toward the north, as on the 3d only the southern quadrants appeared on the chart, while a few vessels in widely scattered localities reported winds of gale force. From the 5th to the 7th an area of low pressure covered a limited area along the North American coast; this was of comparatively slight intensity, with moderate and light winds prevailing over practically the entire ocean. On Chart III "Tracks of Low Areas" (XLIV–87) in the MONTHLY WEATHER REVIEW for August, 1916, is shown a LOW (*I* on Chart IX) that first appeared on the map about 130 miles west of Valentine, Nebr., on the evening of the 5th. This disturbance moved toward the east with a fairly uniform rate of translation, and on the 8th its center was near Eastport, Me., where the barometer read 29.56 inches. On the same day another LOW was central about 8° east of St. Johns, Newfoundland, the lowest barometer reading being 29.33 inches. These two areas evidently merged and on the 9th the center of the disturbance was near latitude 46°, longitude 42. On both the 8th and 9th, only light to moderate winds were reported, while fog covered a limited area in the vicinity of the American coast. The path of LOW *I* then curved toward the northeast and on the 10th the center was near latitude 50°, longitude 32°; the storm had increased in intensity since the previous day, as a number of vessels experienced gales of from 40 to 50 miles an hour. The LOW continued in its northeasterly course until the 12th, when it was central near latitude 59°, longitude 22°, the lowest pressure reading on both the 11th and 12th being 29 inches, and the condition of wind and weather remaining about the same as on the 10th. The disturbance then curved toward the east, moving slowly, and on the 13th was near latitude 60°, longitude 18°. It had decreased somewhat in intensity, for the wind had moderated since the 12th. LOW *I* then curved slightly toward the southeast, and on the 15th the area of low pressure covered Scotland and northern England, the wind velocity on the 14th and 15th being about the same as on the 13th.

A storm of the West Indies hurricane type was described for August, 1916, by Mr. R. H. Weightman in the MONTHLY WEATHER REVIEW for December, 1916 (**44**: 686–688, with Chart X). The disturbance first appeared some distance east of Barbados on August 12, but was too far south to appear on our Chart IX until the 15th. It is shown as LOW *II*, with its center between Haiti and Jamaica. The lowest barometer reading was 29.64 inches, and one vessel near the center of its limited area reported a northeasterly gale of about 50 miles an hour. The highest wind during this storm, reported by any vessel was 55 miles an hour, on the 16th, near latitude 19° N., longitude 82° W.

From the 21st to the 23d a well-developed LOW was central near the 50th parallel and between the 25th and 35th meridians. During these three days the barometric reading at the storms center remained nearly constant at about 29 inches; and westerly gales of from 40 to 55 miles an hour prevailed over the southern quadrants. Between the 23d and 24th this disturbance seems to have moved toward the northeast, as on the latter date the center was near latitude 55°, longitude 25°, where a barometric reading of 28.84 inches was recorded. This fall in pressure apparently was attended by no increase in the wind velocities, which were even slightly lower than on the day before. This LOW then moved a short distance toward the north, increasing in extent and decreasing in intensity, and on the 25th it covered a large area between the 52d and 61st parallels, and the 13th and 33d meridians. On the same date LOWS of slight intensity existed off the coast of Canada and in the Caribbean Sea, respectively, light winds prevailing in both localities, with fog along the Canadian and New England coasts. From the 26th to the 29th the general weather conditions were comparatively featureless, with light winds over the entire ocean, and fog off the Banks of Newfoundland.

On the 30th a LOW, with a minimum reading of 28.89 inches, was central near latitude 56°, longitude 29°, while a number of vessels in the vicinity reported moderate gales. On the same date a second LOW of slight intensity covered a limited area immediately south of Cuba, while a third of much the same character was central about 3° east of Cape Henry. The first, or northern LOW, moved slowly toward the east during the next 24 hours, and on the 31st the center was near latitude 58°, longitude 18°. The barometer fell to 28.84 inches and a few vessels in the western quadrants encountered northwesterly gales of from 50 to 60 miles an hour. The second LOW of August 30 remained practically stationary in position and intensity, while there was no sign of the third on the 31st.

TEMPERATURE.

The mean monthly temperature of the air over the ocean was somewhat above the normal north of the 40th parallel and east of the 60th meridian, while over the waters adjacent to the American coast, and in the Gulf of Mexico, the departures were small, ranging from +1 to −1 degree. The departures at a number of Canadian and United States Weather Bureau stations on the Atlantic and Gulf coasts were as follows:

	°F.		°F.
St. John's, N. F.	−0.6	Norfolk, Va.	+0.2
Sidney, C. B. I.	+2.0	Hatteras, N. C.	−0.4
Halifax, N. S.	+1.9	Charleston, S. C.	+1.5
Eastport, Me.	+0.5	Key West, Fla.	−1.3
Portland, Me.	+0.2	Tampa, Fla.	+1.7
Boston, Mass.	+2.9	Mobile, Ala.	+2.3
Nantucket, Mass.	−0.7	New Orleans, La.	+2.4
Block Island, R. I.	+0.1	Galveston, Tex.	+0.4
New York, N. Y.	+1.4	Corpus Cristi, Tex.	+0.5

The lowest temperature reported during the month was 48°F. and occurred on the 5th and 6th over the waters adjacent to the coast of Labrador, while the high-

est for the same region was 58°, observed on a number of different days.

FOG.

Off the Banks of Newfoundland the number of days on which fog was observed was somewhat below the normal, while in the vicinity of Nantucket Shoals it was reported on 13 days, a percentage of 42, while the normal of that region is from 30 to 35 per cent. Over the central portion of the steamer routes the amount was about the same as usual, while off the coasts of Ireland and Scotland it was considerably above the normal.

Winds of 50 mis./hr. (22.4 m./sec.) or over during August, 1917.

Station.	Date.	Velocity.	Direction.	Station.	Date.	Velocity.	Direction.
		Mis./hr.				*Mis./hr.*	
Bismarck, N. Dak.	22	50	nw.	New York, N. Y...	24	52	s.
Duluth, Minn....	23	56	nw.	Oklahoma, Okla...	8	50	n.
Eastport, Me.....	10	54	ne.	Point Reyes Light,			
El Paso, Tex.....	29	53	nw.	Cal.....	19	51	nw.
Grand Junction,				Do.....	20	54	nw.
Colo.....	10	54	nw.	Sandusky, Ohio..	16	54	n.
Kansas City, Mo..	8	62	nw.	Sandy Hook, N. J.	1	73	s.
Lincoln, Nebr....	4	60	nw.	Do.....	2	56	s.
Marquette, Mich..	4	55	se.	Do.....	24	64	sw.
Mount Tamalpais,							
Cal.....	5	60	nw.				

CONDENSED CLIMATOLOGICAL SUMMARY.

In the following table are given for the various sections of the climatological service of the Weather Bureau the monthly average temperature and total rainfall; the stations reporting the highest and lowest temperatures, with dates of occurrence; the stations reporting the greatest and least total precipitation; and other data as indicated by the several headings.

The mean temperature for each section, the highest and lowest temperatures, the average precipitation, and the greatest and least monthly amounts are found by using all trustworthy records available.

The mean departures from normal temperatures and precipitation are based only on records from stations that have 10 or more years of observations. Of course the number of such records is smaller than the total number of stations.

Condensed climatological summary of temperature and precipitation by sections, August, 1917.

Section.	Temperature.							Precipitation.					
	Section average.	Departure from the normal.	Monthly extremes.					Section average.	Departure from the normal.	Greatest monthly.		Least monthly.	
			Station.	Highest.	Date.	Station.	Lowest. Date.			Station.	Amount.	Station.	Amount.
	°F.	°F.		°F.			°F.	*In.*	*In.*		*In.*		*In.*
Alabama	78.1	−1.5	Decatur	101	1	Oneonta	46 26	6.17	+1.90	Alaga	15.55	Madison	1.29
Arizona	77.3	−0.4	Aztec	119	24	Morman Lake R. S.	31 20	1.43	−0.67	Bisbee	6.20	Redrock	0.00
Arkansas	77.1	−2.1	Bee Branch	104	16	Dutton	43 25	4.10	+0.59	Warren	7.50	Marked Tree	0.90
California	72.5	−0.3	Greenland Ranch	123	1†	Barrett Dam	30 21†	0.04	−0.04	McCloud	1.53	102 stations	0.00
Colorado	62.9	−2.3	Two Buttes	104	4	Fraser	24 29	1.73	−0.21	Fairplay	6.13	Denver	0.05
Florida	81.2	−0.1	5 stations	99	1†	2 stations	58 26	7.72	+0.44	Pinellas Park	20.06	Fort Pierce	3.18
Georgia	78.5	−0.8	4 stations	100	1†	Ramhurst	46 26	5.50	+0.06	Fort Gaines	11.49	Millen	1.24
Hawaii (for July)	74.2	−0.2	Mahukona	96	17	Volcaus Ob., Hawaii	49 12	3.05	−2.09	Wahiawa M'nt'n	15.40	7 stations	0.00
Idaho	67.4	+0.4	Weiser	108	2	New Meadows	20 1	0.19	−0.64	Rice	1.30	17 stations	0.00
Illinois	71.8	−2.2	Montrose	101	1	2 stations	39 25	2.66	−0.69	Morrisonville	7.59	Antioch	0.17
Indiana	71.9	−1.3	Rome	100	5	Salem	37 28	2.60	−0.72	Monticello	5.46	Anderson	1.10
Iowa	69.4	−2.4	Lenox	102	4	Matlock	31 28	2.20	−1.39	Onawa	6.31	Davenport	0.70
Kansas	73.4	−3.6	Phillipsburg	109	4	2 stations	40 28†	4.94	+1.90	Macksville	10.20	Leoti	1.58
Kentucky	73.9	−1.8	2 stations	100	1†	2 stations	42 26†	3.49	+0.14	Pikeville	8.80	London	0.98
Louisiana	81.1	−0.6	Angola	108	9	2 stations	53 26	5.71	+0.81	Paradis	12.17	Logansport	1.71
Maryland-Delaware	73.5	+0.1	2 stations	100	1	Oakland, Md.	40 27	3.10	−1.49	Emmitsburg, Md.	6.31	Washington, D. C.	0.77
Michigan	64.9	−1.8	Midland	103	1	2 stations	25 30	2.38	−0.32	Wasepi	5.67	Bloomingdale	0.34
Minnesota	64.9	−1.9	2 stations	100	17	Meadowlands	26 29	2.10	−1.35	Winton	6.57	Detroit	0.40
Mississippi	79.2	−1.3	Auguilla	102	16	Tupelo	49 26	4.72	+0.37	Magnolia	9.87	Crenshaw	1.05
Missouri	73.3	−2.9	Caruthersville (2)	104	1†	Steffenville	38 10	4.45	+0.94	Jackson	11.46	Palmyra	0.98
Montana	64.0	0.0	Springbrook	110	17	2 stations	19 1†	0.48	−0.66	Adel	1.96	3 stations	0.00
Nebraska	69.6	−3.1	Geneva	108	4	Gordon	32 24	2.34	−0.48	Wisner	9.10	Arcadia	0.27
Nevada	70.6	0.0	Las Vegas	108	7	Gold Creek	32 15	0.35	−0.10	Searchlight	2.49	6 stations	0.00
New England	69.5	+2.6	Waterbury, Conn	102	1	Chelsea, Vt.	29 27	5.00	+1.05	Blue Hill, Mass	8.58	Block Island, R. I.	0.73
New Jersey	74.0	+1.9	Elizabeth	103	1	Culvers Lake	41 26	2.21	−2.75	Long Branch	5.68	Paterson	0.86
New Mexico	70.3	−0.4	Artesia	107	11	2 stations	30 27†	2.53	−0.34	Mayhill Ranger Sta.	8.12	Fruitland	T.
New York	69.2	+1.7	Farmingdale	101	1	Gabriels	37 31	3.79	+0.11	Newark Valley	8.59	Mount Vernon	1.17
North Carolina	74.8	−0.7	3 stations	100	1	Banners Elk	40 26	3.60	−2.40	Statesville	7.71	Enfield	1.15
North Dakota	65.3	−0.3	Marstonmoor	105	18	Marstonmoor	26 29	0.83	−1.46	Lisbon	3.40	Buford	T.
Ohio	71.3	−0.3	Danbury	101	1	Peebles	38 26	2.70	−0.36	Demos	6.86	Ironton	1.01
Oklahoma	78.1	−3.1	2 stations	107	1	2 stations	44 29	5.80	+2.99	Alva	11.10	Eldorado	0.74
Oregon	68.4	+2.7	Echo	106	16	Crescent	21 10	0.08	−0.42	Vistillas	0.76	50 stations	0.00
Pennsylvania	71.2	+1.2	Carlisle	101	2	Brookville	38 26	6.69	+0.70	Bloserville	17.50	Milford	1.06
Porto Rico	78.6	−0.5	2 stations	96	8†	Albonito	58 23	6.75	−1.14	Anasco	18.85	Destino	1.97
South Carolina	78.5	−0.3	Calhoun Falls	102	1	Mountain Rest	49 25	3.23	−2.93	Conway	8.62	Darlington	0.70
South Dakota	67.9	−2.0	Kadoka	108	3	Pollock	31 9	1.49	−1.21	La Delle	3.77	Belle Fourche	0.40
Tennessee	74.6	−1.9	London	99	6	2 stations	39 26	4.06	−0.13	Carthage	7.76	Bolivar	1.18
Texas	83.9	+1.1	Jourdanton	113	22	Lieb (near)	43 29	1.73	−0.53	Jefferson	8.14	6 stations	0.00
Utah	68.9	−0.6	St. George	108	2	Snowville	30 29	0.51	−5.20	Monticello	2.01	10 stations	0.00
Virginia	73.4	−0.6	Dimond Springs	103	1	2 stations	35 26	2.90	−1.60	Charlottesville	8.11	Radford	0.36
Washington	67.4	+2.1	3 stations	105	16	Castle Rock	30 10	0.13	−0.62	Quests River	1.51	55 stations	0.00
West Virginia	71.6	−0.1	2 stations	102	1†	4 stations	39 26	3.53	+0.02	Moundsville	8.80	Clay	0.94
Wisconsin	64.5	−2.2	Stevens Point (2)	98	1†	Big St. Germain Dam	27 30	2.73	−0.80	Marshfield	8.41	New Richmond	0.57
Wyoming	60.2	−2.8	2 stations	101	3†	2 stations	22 11†	0.83	−0.34	Sand Lake	2.31	Hyattville	0.00

† Other dates also.

DESCRIPTION OF TABLES AND CHARTS.

(See MONTHLY WEATHER REVIEW, July, 1917, p. 388.)